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# **USING YOUR DISC DRIVE**

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Supplement to manual P/N 09114-90005 Dated October 1985

## **Introduction**

This supplement contains operating information on the following computers:

- HP Portable and HP Portable Plus
- HP Series 70
- HP Series 40
- IBM PC and PC XT

# HP Portable and HP Portable Plus Operations

## System Configuration

External disc drives are labeled starting with drive C. As many as eight single disc drives can be connected (drives C, D, E, F, G, H, I, and J). Turn on all the equipment. The first step is system configuration.

1. When the P.A.M. menu appears on the screen, press the following softkey:

*SYSTEM  
CONFIG*

This is softkey f6.

2. The display that appears next. There are three lines that have to do with external disc drives. These lines are the only lines of interest at this time. These lines are "Memory/Edisc:", "External disc drives:", and "Disc write verify:." Please locate these; they are the first three lines.

### [System Configuration]

*Memory / Edisc: 160K / 112K*

*External disc drives: 1*

*Disc write verify: Off*

*Power Save mode: On*

*Display timeout: 5 min*

*Cursor: Underscore*

*Console Mode: HP*

*Console Font: HP*

*Beep: Long*

*Plotter Interface: HP-II.*

*Printer: HP Graphics / Alpha*

*Printer Interface: HP-IL*

*Print pitch: Normal*

*Print line spacing: 6 lines/inch*

*Printer skip perf: Yes*

The default configuration for "Memory/Edisc:" should be used at this time. This line must be changed only if you run out of room in the memory or electronic disc. A warning is displayed if this ever happens to you. Space can be taken from either memory or electronic disc and allocated to the other when needed.

The next line of importance is "External disc drives:". The default configuration for an external disc drive is NONE. This must be changed to "1" or the number of HP 9114Bs you have connected to your system. Press the cursor control keys (arrow keys - top

right) until the "External disc drives:" line is highlighted. Then press the next and previous softkeys until you obtain the proper number.

The other line of interest is "Disc write verify;". This function can be off or on. When on, everything written to the disc is verified or checked to ensure that it is correct. This takes about twice as long, but ensures correct data on the disc. When off, the data is just written to the disc. Nothing needs to be done at this time, but you should know that verify is available. When the system configuration display is correct, press the Exit Config softkey.

The HP Portable and Portable Plus automatically assign each disc drive they see on the HP-II (loop). Tracing from the "OUT" HP-II cable, the first disc drive is assigned the letter C, the next disc drive is assigned D, and so on until the maximum of 8 external drives have been assigned. You need to know these letter assignments as they are used whenever you specify commands that store or retrieve data from the external disc.

## Disc Formatting

The HP 9114B uses double-sided discs. Data is written on both sides of the disc. Thus the normal formatting procedure is double-sided formatting. Single-sided formatting is allowed for transferring data from older systems. See the next section for single-sided formatting.

Before a flexible disc can be used for the first time, it must be formatted. Formatting establishes the directory and volume label as well as verifying that the media is not damaged. Shown next are two ways to format discs. Insert a blank disc into the disc drive.

1. From the P.A.M. display, pressing the File Manager (f2) softkey gets you to a Format softkey. Press the key labeled Format (f5) and answer the next questions.

"Enter the disc to format." The first disc drive is assigned the letter C. Type **C:** and press Return.

"Enter a volume label (optional)." The volume label is the name you want to call the disc. This can be up to 11 characters. For example, let's call this disc "First." Type **FIRST** and press Return.

The information is displayed on the first two lines below the cursor. Press the Start Format key (f1) if these two lines are correct.

"Formatting Disc. Please wait." appears on the display. Formatting a disc takes about 1 1/2 minutes. The interleave used with this formatting method is 8, the optimal interleave for HP Portables/9114B operation.

After formatting is complete, pressing the Exit Format (f8) softkey returns you to the main File Manager display. To exit File Manager, press the Exit File Manager softkey. This ends the format procedure.

2. The second method of formatting discs is to use the MS-DOS Format command. From the initial P.A.M. display, tabbing over to the area called "DOS Commands" and pressing Return allows you to use the DOS command called **FORMAT**. The interleave used in this command is 8, the optimal interleave for your HP Portables/9114B system.

Type **FORMAT C:** and press Return.

"Press any key to begin formatting C:" is displayed. Press any key on the keyboard. Formatting takes about 1 1/2 minutes.

After formatting is complete, there is another prompt on the display, "Volume label (11 characters, Enter for none)?". Press Return if you don't want a label or Enter the name and press Return if you want to label the volume.

When completed, "Format another (Y/N)?" appears on the display. Typing N gets you back to entering MS-DOS commands. Type **EXIT** to return to P.A.M.

### **Formatting Single-sided**

The HP Portables/9114B system can format double-sided discs in a single-sided format. This is allowed for data compatibility with other 3 1/2-inch disc systems. There is a utility called "Format.Com" on the utility disc supplied with your HP Portable or Portable Plus computer. You must load the "Format.Com" utility into your HP Portables. Use the following sequence.

Place the Utility disc into your HP 9114B.

Tab over to the DOS Command block and press Start Applic.  
From the MS-DOS command display, type:

**COPY C: FORMAT.COM A:** and press Return

This loads the utility and allows you to use the extra parameters explained in the following **FORMAT** command.

The MS-DOS command that allows this compatibility with its parameters is shown next.

**Format C:/W** -Single-sided

/X -Double-sided with 256 byte sectors

/Y -Double-sided with 512 byte sectors

/Z -Double-sided with 1024 byte sectors

## **Copying to and from the Electronic Disc**

Two MS-DOS commands are used when transferring files (data and programs) between the electronic and external discs. These commands are **COPY**Check Disc (**CHKDSK**). The **DIR C:** command is used to list the file directory on the external disc.

Now, from the P.A.M. display, let's tab to MS-DOS Command section and press (Return or Start Applic). This puts the HP Portables into MS-DOS command mode. Type the next line(s) to display the file directory.

**DIR C:** and press Return for the external disc

or

**DIR A:** and press Return for the electronic disc

When using the **COPY** command, don't forget the space between the filename and the destination address (filename A: and filename C:); this also applies to the space between the \* and destination address (\* C: and \* A:) when copying the entire disc.

**COPY C:filename A:**

and pressing Return – copies the file specified from the external disc C to the electronic disc A.

**COPY A:filename C:**

and pressing Return – copies the file specified from the electronic disc A to the external disc C.

**COPY A:\*.\* C:**

and pressing Return copies the entire electronic disc to the external disc.

**COPY C:\*.\* A:**

and pressing Return copies the entire external disc to the electronic disc.

The **CHKDSK** command is used to check the available disc space. This command can be used to ensure space is available before transferring files. If you get the "Insufficient Disc Space" error when transferring files, you can either allocate more space for the electronic disc (if this is the disc that is out of space) or insert another formatted disc into the external drive. To gain more space for the electronic disc, you can either purge some existing file or get the space from the memory space. Memory space is allocated using the first line in the display described earlier — see *System Configuration* in this section.

#### **CHKDSK C:**

and pressing Return — displays the usable space remaining on the external disc.

#### **CHKDSK A:**

and pressing Return — displays the usable space remaining on the electronic disc.

Typing EXIT gets you back to the P.A.M. display.

### **Error Messages**

The following error messages can occur with HP Portables.

"Non - DOS Disc Error Reading Drive \_\_\_\_." The disc contains a non recognizable volume label.

"No Disc in Drive — Drive Not Ready —  
Error Reading Drive \_\_\_\_."

These three errors indicate the disc drive does not contain a disc, or the disc drive is not turned on or connected (HP-II cable), or the disc drive contains a bad disc or a disc formatted by another type of computer. In the case of the bad disc, the problem could be a bad file; try this several times and access different files to determine the extent of disc damage.

"Disc Space Unavailable" — The electronic disc or external disc is full.

# Series 70 Operation

## Operation with the HP 71B

Disc storage for the HP 71B is handled using the following commands: **ASSIGN IO**, **INITIALIZE**, **COPY**, and **CAT**.

**ASSIGN IO** is used to assign an address to each device on the loop. A position as well as a two letter code is used to establish this address.

### **ASSIGN IO "":DD"**

and pressing END LINE – assigns DD to the first or next sequential HP-IL device on the loop. Also assigned is the position or device number. This is the number (1, 2, 3, etc.) of the device on the HP-IL cable. Numbering is obtained sequentially by position on the HP-IL cable as you trace the "OUT" cable from your computer. The DD is used as an example here. Whatever two characters you use can be used in the **INITIALIZE**, **COPY**, and **CAT** commands. After you execute the **ASSIGN IO** statement, you can address a device by the position number or the two letter code. This will be used later in some examples.

**INITIALIZE** is used to get the disc ready to receive data and to establish a volume label, as well as to verify that the media is not damaged.

### **INITIALIZE "TEST:DD"**

and pressing END LINE – establishes the volume label of TEST on the disc at device location DD. You might want to write the volume name you give the disc on the disc jacket label. This volume name can be used to access the disc using the **CAT** and **COPY** commands and is very easy to forget. Initializing takes approximately 1 1/2 minutes. The disc access light on the disc drive goes out when initializing is complete.

**COPY** allows you to move files and data to and from the disc drive. The next two examples of the **COPY** command are shown three times. Each time a different form of HP-IL addressing is used.

**Example one** – Copying a file from the HP 71 to the disc drive.

**COPY filename TO :1**

**COPY filename TO.TEST**

**COPY filename TO :DD**

and pressing END LINE – writes the file specified to the disc.

**Example two** – Copying a file from the disc drive to the HP 71.

**COPY filename:1**

**COPY filename.TEST**

**COPY filename:DD**

and pressing END LINE – reads the file specified from the disc.

**CATALOG (CAT)** is used to obtain a list of the files that are stored on the disc. The display scrolling keys are used to view the different files (scrolling up and down) and the entire file name and data concerning each file (scrolling to the end of the display).

**CAT :1**

and pressing END LINE – displays the filenames on the disc.  
The "1" represents the position of the disc drive on the HP-IL.

**CAT.TEST**

and pressing END LINE – displays the filenames on the disc.  
TEST is the volume name.

**CAT :DD**

and pressing END LINE – displays the filenames on the disc.  
DD was the assignment made in the previous **ASSIGN IO** command.

## **Formatting Singled-sided Discs**

The HP 9114B Disc Drive is a double-sided disc drive. When you initialize a disc, the disc is initialized in double-sided format. For single-sided compatibility and data exchange with other computers, the following program allows your HP 71B/9114B system to initialize a double-sided disc in single-sided format.

After keying in and starting the program, you are prompted for the address of the disc drive. The address is the position of the HP 9114B in the HP-IL (loop). The program also asks for the number of directory entries and a volume label. The directory entries are usually set to 200. The volume label is a name you give the disc. This name can be six characters or less. See the HP 71 Owner's manual for more details. As a final question, the program asks if you want to initialize another disc. Y for yes and N for no is the required response. After this, the program either repeats or stops.

```
0010 ! SINGLE SIDED FORMAT UTILITY FOR 71B AND THE HP 9114B
0020 INPUT "ADDRESS OF DRIVE? ";A
0030 RESET HPL
0040 CLEAR :A
0050 SEND UNL MTA LISTEN A SAD 5 DATA CHR$(49)&CHR$(243) END 95
0060 SEND UNL MTA LISTEN A SAD 14
0070 SEND END 4
0080 SEND UNL MLA TALK A SAD 16
0090 ENTER :LOOP USING "# ,b":Q
0100 IF Q = 0 THEN GOTO 'NOERR'
0110 DISP "ERROR"
0120 STOP
0130 'NOERR':!
0140 INPUT "NUMBER OF DIRECTORY ENTRIES? ";N
0150 INPUT "VOLUME LABEL? ";VS
0160 INPUT "PRESS END LINE TO START";CS
0170 DISP "INITIALIZING"
0180 INITIALIZE VS&";&STR$(A),N
0190 INPUT "FORMAT ANOTHER(Y/N)? ";CS
0200 IF C = "$Y" THEN GOTO 140
0210 CLEAR :A
0220 STOP
```

## Operation with the HP 75

Disc storage for the HP 75 is handled using the following commands: **ASSIGN IO**, **INITIALIZE**, **COPY**, and **CAT**.

**ASSIGN IO** is used to assign a device code to each device on the loop. A device code is generally a two character code representing each device. In our example, we use DD to represent Disc Drive.

### ASSIGN IO 'DD'

and pressing Return – assigns DD to the first or next sequential HP-IL device on the loop. The DD is used as an example here. Whatever two characters you use must be used in the **INITIALIZE**, **COPY**, and **CAT** commands. This is used in the examples.

**INITIALIZE** is used to get the disc ready to receive data.

## **INITIALIZE ':DD'**

and pressing Return – prepares the disc at device code DD to receive data. The device code must be used in all the commands to this device. Initializing takes approximately 1 1/2 minutes. The disc access light on the disc drive goes out when initializing is complete.

**COPY 'filename' TO 'filename:DD'**  
and pressing Return – writes the file specified to the disc.

**COPY 'filename:DD' TO 'filename'**  
and pressing Return – reads the file specified from the disc.

**CATALOG (CAT)** is used to obtain a list of the files that are stored on the disc. The display scrolling keys are used to view the different files (scrolling up and down) and the entire file name and data concerning each file (scrolling to the end of the display).

## **CAT ':DD'**

and pressing END LINE – displays the filenames on the disc.

## **Formatting Single-sided Discs**

The following utility can be entered into the HP 75 to format 3 1/2-inch double-sided discs in single-sided format. These discs are compatible with other HP disc products that use single-sided drives. This utility requires either the I/O Utilities (00075-13013) or the I/O ROM (00075-15001) to be resident in your HP 75.

This utility prompts you for the device code. This is the device code specified using the **ASSIGN IO** command. The utility then prompts you for the number of directory entries. A typical number of directory entries for the single-sided formatted disc is 200. After RTN is pressed, the HP 75 begins the format operation.

```
10 ! SINGLE SIDED FORMAT UTILITY FOR HP 75 AND HP 9114B
20 ! THIS PROGRAM REQUIRES EITHER I/O UTILITIES OR THE I/O ROM
30 INPUT "DEVICE CODE OF DRIVE? ";A$
40 SENDIO AS,"UNL,LAD#,SDC,""
50 SENDIO AS,"UNL,LAD#,CD:65,DS:31,DS:F3,EN:5F,""
60 SENDIO AS,"UNL,LAD#,CD:6E,EN:04,""
70 Q=SENTIOS(A$,TAD#,CD:70,SDA')
80 IF Q= SCHR(0) THEN 110
90 DISP "ERROR IN SETTING FORMAT"
```

```
100 GOTO 160
110 INPUT "NUMBER OF DIRECTORY ENTRIES? ";N
120 INPUT "PRESS 'RTN' TO START";NS
130 INITIALIZE AS,N
140 INPUT "FORMAT ANOTHER (Y/N)? ";CS
150 IF C = $"Y" THEN 110
160 SENDIO AS,"UNL,LAD# ,SDC"
170 END
```

## Series 40 Operations

Disc storage for the Series 40 is handled using the following commands: **NEWM**, **DIR**, **WRTP**, **READP**, **WRTA**, and **READA**. These commands are explained next. For a more complete explanation of these commands see the HP-IL Module Owner's Manual (P/N 82160-90001).

### NEWM

The **NEWM** command is used to initialize the flexible disc. **NEWM** is automatically directed to the first device on the loop. The first device must be your HP 9114B. Pressing the following keys initiates the **NEWM** command.

XEQ ALPHA **NEWM** ALPHA

The calculator then prompts you for the number of directory entries or number of files you plan to store on the the disc. This number can be as high as 447, but generally is around 80. The more directory entries, the longer the search times when using the **DIR** (directory) command.

When you see **NEWM**, type **080** or the number of directory entries you want. One to two seconds after you type the final number, the disc access light should come on as the 9114B begins the 1 1/2 minute initialize sequence.

### DIR

The **DIR** command is used to read the directory which includes the file names, file types, and file sizes. **DIR** always accesses the first device on the loop which must be the tape drive. Press the following key sequence.

XEQ ALPHA **DIR** ALPHA

**DIR** uses the **ALPHA** register to display directory information.

## **WRTP, READP, WRTA, and READA**

These four operations require that you place the program name into the ALPHA register before you execute the operation. To execute the operations, press the following keys.

**XEQ ALPHA READP ALPHA**

Substitute your operation in place of the READP.

**WRTP** – Write program

**READP** – Read program

**WRTA** – Write all (the entire calculator contents and memory modules are written to the mass storage).

**READA** – Read all (the entire calculator contents and memory modules are read from the mass storage).

## **ASCII Data Files**

The two ASCII data file commands **SAVEAS** and **GETAS** were not designed to operate with a disc drive that powers down when not in use. An error is generated when you use these commands because the disc drive does not power up fast enough. When programming with these two commands, set up the following sequence.

Disable the errors

Send command (**SAVEAS** or **GETAS**) – This starts the disc drive.

Enable the errors

Resend the command (**SAVEAS** or **GETAS**) – Executes the command.

**SAVEAS** and **GETAS** are explained in the section titled "Accessing Mass Storage Files" in the Series 40 Owner's Manual P/N 00041-90492.

## **Series 40/9114 Utility**

The Series 40 calculators can access 130 kbytes of the HP 9114B's 630 kbytes. The following utility, when entered into a Series 40, allows you to access the full 630 kbytes. The utility requires that the 82183A Extended I/O Module be installed in your calculator. Additionally, this utility is available from the User's Library (#41-09114) on 3 1/2-inch media.

There are six operations or functions that ■■■■■ affected by this utility when they are executed: WRTP, WRTPV, WRTS, WRTK, WRTA, AND CREATE. All these functions operate the same ■■■■■ before (documented in the HP-IL Module Owner's manual). These 6 HP-IL functions must be reassigned to the keyboard in one of the following ways:

1. Activate USER mode and enter the program. When you need to enter any of the above HP-IL functions, simply press the key to which it is assigned. Do not use (XEQ) to enter these functions.
2. Change the following labels to different names while entering the program:

LBL "WRTP"; LBL "WRTPV"; LBL "WRTS"; LBL "WRTK";  
LBL "WRTA"; LBL "CREATE"  
(For example, change LBL "WRTP" to LBL "WRTPX".)

When the entire program is entered, go back and change the modified labels to their proper names.

Following are the 4 most common errors you can get when using this utility.

Error Number	Error Description
18	Uninitialized Media
20	No Media
21	Low Battery
99	Other Errors (This includes the write-protect disc error.)

The Utility is listed next.

01"LBL "DSCT"	
02 ADRON	-
03 16	
04 FINDAID	FIND MASS STORAGE DEVICE
05 X#Q?	"
06 GTO "VLL"	
07 "NO DRIVE"	
08 PROMPT	
09 GTO "DONE"	
10"LBL "VLL"	
11 SELECT	
12 0	
13 ENTER	
■■■ XEQ 'SEEK'	- SEEK TO VOLUME LABEL TRACK 0, RECORD 0
15 RCLSEL	
16 TAD	

17 2  
■ DDT - READ RECORD  
19 XEQ "WAIT"  
20 4  
21 DDT - SWAP BUFFERS  
22 XEQ "WAIT"  
23 I  
24 DDT - SEND BUFFER 1  
25 ■  
26 INAN  
27 1  
28 ATOXX  
29 128  
30 X#Y? - CHECK FOR NON-LF DISC  
31 GTO "NL"  
32 XEQ "B2D" - READ LOCATION OF 1ST RECORD OF DIRECTORY  
33 STO 01  
34 4  
35 INAN  
36 XEQ "B2D" - DIRECTORY LENGTH  
37 1  
38 -  
39 RCL 01  
40 + - CONSTRUCT COUNTER TO SEARCH DIRECTORY  
41 STO 02  
42 1 E3  
43 /  
44 ST + ■ -  
45 RCL 01  
46 INT  
47 XEQ "D2B"  
48 XEQ "SEEK" - SEEK TO START OF DIRECTORY  
49 LBL 10  
50 RCLSEL  
51 TAD  
52 2 - READ RECORD FROM DIRECTORY  
53 DDT  
54 XEQ "WAIT"  
55 RCLSEL  
56 LAD  
57 9  
58 DDL - COPY BUFFER 0 TO BUFFER 1  
59 XEQ "WAIT"  
60 ■  
61 DEV1  
62 234 - SET BYTE POINTER TO LAST ENTRY IN RECORD  
63 OUTXB  
64 RCLSEL  
65 TAD  
66 1  
67 DDT - SEND BUFFER 1  
68 INXB  
69 INXB  
70 +  
71 510 - FOUND A RECORD WITH ROOM  
72 X=Y?  
73 GTO "RS"  
74 XEQ "B2D"  
75 STO 03 - SAVE LOCATION AND LENGTH OF FILE

76 XEQ "B2D"  
77 ST+ 03  
78 ISC 01  
79 GTO 10  
80\*LBL "DF"  
■■■ "DIR FULL"  
■■■ PROMPT  
83 GTO "DONE"  
84\*LBL "NL"  
85 "NOT LIF DISC"  
86 PROMPT  
87 GTO "DONE"  
88\*LBL "RS"  
89 RCLSEL  
90 LAD  
91 3  
92 DEVL  
93 CLX  
94 OUTXB  
95 RDN  
96 TAD  
97 1  
98 DDT  
99 1.007  
100 STO.04  
101\*LBL 12  
102 12  
103 INAN  
104 ATOXR  
105 ATOXR  
106 +  
107 510  
108 X=Y?  
109 GTO "WRT"  
110 XEQ "B2D"  
111 STO 03  
112 XEQ "B2D"  
113 ST+ 03  
114 12  
115 INAN  
116 ISC 04  
117 GTO 12  
118 RCL 01  
119 INT  
120 RCL 02  
121 X=Y?  
122 GTO "DF"  
123\*LBL "WRT"  
124 RCL 01  
125 INT  
126 XEQ "D2B"  
127 XEQ "SEEK"  
128 RCLSEL  
129 LAD  
130 3  
131 DDL  
132 RCL 04  
133- 1  
134 -

IN LAST ENTRY IN RECORD

- DIRECTORY FULL-PACK OR USE NEW MEDIA

- EXIT IF NOT A LIF DISC

- START SEARCH OF RECORD FOR LOCATION TO WRITE DUMMY ENTRY

- RESET BYTE POINTER TO 0

- SEND BUFFER 1

- READ 2 BYTES OF FILETYPE - IF BOTH 255, THEN THIS IS WHERE WE WRITE DUMMY ENTRY

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- SAVE LOCATION AND LENGTH OF FILE- NEEDED FOR DUMMY ENTRY

- IF LAST RECORD - LAST ENTRY OF RECORD, DIRECTORY IS FULL - LAST ENTRY RESERVED BY 41

- SEEK TO TRACK AND RECORD WHERE DUMMY ENTRY IS TO BE WRITTEN

-

- SET BYTE POINTER

135 32  
136 •  
137 OUTXB  
138 RCLSEL  
139 LAD  
140 6 - PARTIAL WRITE MODE  
141 DDL  
142 "D (10 spaces)" - DUMMY DIRECTORY ENTRY  
143 0  
144 XTOAR  
145 XTOAR  
146 XTOAR  
147 XTOAR  
148 RCL 03  
149 XEQ "D2B"  
■ XTOAR  
151 RDN  
■ XTOAR  
153 0  
■ XTOAR  
155 XTOAR  
156 RCL 05  
157 FC7 09  
■ GTO 00  
159 32  
160 /  
161 ENTER  
162 INT  
163 X# Y?  
164 ISG X  
165 FIX 4  
166\*LBL 00  
167 XEQ "D2B" - LENGTH OF FILE  
■ XTOAR  
168 RDN  
170 XTOAR  
171 20 - WRITE TO TAPE  
172 OUTAN  
173 ADRON  
174 RCLSEL  
175 LAD  
176 8 - CLOSE RECORD  
177 DDL  
178 SF ■  
179 CLA  
■ ARCL 06  
181 ARCL 07  
182 ARCL 08 - RECALL CONTENTS OF ALPHA + X BEFORE  
■ ARCL 09 ■ FUNCTION WAS ATTEMPTED  
184 RCL 05  
■ GTO IND 00  
186\*LBL "WRTP"  
187 CP 10  
■ CF 09  
189 1 - WRITE PROGRAM  
190 STO 00  
191 9:  
192 STO 05  
193\*LBL 01

194 SF ■■■  
195 WRTP  
196 GTO "OP"  
197\*LBL "WRTPV"  
198 CF 10  
199 CF 09  
■■■ 2  
201 STO 00  
■■■ I - WRITE PRIVATE PROGRAM  
203 STO 05  
204\*LBL 02  
■■■ SF ■■■  
206 WRTPV  
207 GTO "OP"  
208\*LBL "WRTS"  
209 CF 10  
210 SF ■■■  
211 3  
212 STO ■■■  
213 I - WRITE STATUS  
214 STO 05  
215\*LBL 03  
216 ■■■ 25  
217 WRTS  
218 GTO "OP"  
219\*LBL "WRTK"  
220 CF 10  
221 CF 09  
222 ■■■  
223 STO 00  
224 I - WRITE KEYS  
225 STO 05  
226\*LBL ■■■  
227 SF ■■■  
228 WRTK  
229 GTO "OP"  
230\*LBL "WRTA"  
231 CF 10  
232 CF ■■■  
233 5  
234 STO 00 - WRITE ALL  
235 11  
236 STO 05  
237\*LBL 05  
■■■ SF 25  
239 WRTA  
240 GTO "OP"  
241\*LBL "CREATE"  
242 CF 10  
243 SF ■■■  
244\*LBL 06  
245 SF 25 - CREATE  
246 CREATE  
247 STO 05  
248 ■■■  
■■■ STO 00  
250 GTO "OP"  
251\*LBL "B2D"  
252 4

253 INAN  
254 ATDXR  
255 ATDXR  
256   
257 \*  
258 +  
259 RTN  
260 LBL "D2B"  
261 ENTER  
262 ENTER  
263 256  
264 MOD  
265 X<>Y  
266 LASTX  
267 /  
268 INT  
269 RTN  
270 LBL "OP"  
271 FS? 25  
272 GTO "WP?"  
273 99  
274 FS? 10  
275 GTO "ERROR"  
276 6:009  
277 STO L  
278 LBL 07  
279 ASTO IND L  
280 ASHF  
281 JSG L  
282 GTO 07  
283 GTO "DSC?"  
284 LBL "WAIT"  
285 LBL 11  
286 SF 25  
287 INSTAT  
288 FC?C 25  
289 GTO 11  
290 FS? 05  
291 GTO 11  
292 FS? 04  
293 GTO "ERROR"  
294 RTN  
295 LBL "WP?"  
296 FC? 10  
297 GTO "DONE"  
298 2  
299 RCL 00  
300 X>Y?  
301 GTO "DONE"  
302 RCL 01  
303 INT  
304 XEQ "D2B"  
305 XEQ "SEEK"  
306 RCLSEI  
307 LAD  
308 3  
309 DDL  
310 RCL 04  
311 32

- TAKE 4 BYTES FROM LOOP AND RETURN TO X DECIMAL # OF LAST 2 BYTES. (16-BIT WORD)

-

- BREAK DECIMAL # IN X INTO 2 BYTES  
XY MOST SIG. BYTE  
Y LEAST SIG. BYTE

-- EXECUTED AFTER FUNCTION ATTEMPT

- IF SUCCESSFUL, GOTO WP?  
IF NOT, WAS IT 2ND TRY?  
IF 2ND TRY, EXIT  
IF 1ST TRY, SAVE ACYNA AND X + TRY AGAIN

- CHECK STATUS OF DRIVE

- KEEP CHECK IF BUSY

- RETURN IF IDLE

- DISPLAY ERROR # IF ERROR

- IF SUCCESSFUL ON 1ST TRY, EXIT

-

- IF NOT WRTP OR WRTPV, ENT

-

- MUST ALTER DIR ENTRY FOR WRTP AND WRTPB  
TO SHOW CORRECT # OF REGISTERS CONSUMED -  
NO WAY TO DETECT THIS WHEN DUMMY  
ENTRY IS WRITTEN

312 \*  
313 4  
314 -  
315 OUTXB  
316 RCLSEL  
317 TAD  
318 1  
319 DDT  
320 INXB  
321 INX8 - READ LENGTH OF FILE IN BYTES  
322 X>0?  
323 ISG Y  
324 FIX 4  
325 RDN  
326 STO 05  
327 RCLSEL  
328 LAD  
329 3  
330 DDL --  
331 RCL 04  
332 32  
333 \* - SET BYTE POINTER  
334 13  
335 -  
336 OUTXB  
337 RCLSEL  
338 LAD  
339 # - PARTIAL WRITE MODE  
340 DDL  
341 RCL 05  
342 OUTXB  
343 RCLSEL  
344 LAD  
345 8  
346 DDL - CLOSE RECORD  
347 GTO "DONE"  
348\*LBL "SEEK"  
349 ADROFF  
350 RCLSEL  
351 LAD  
352 4  
353 DDL  
354 RDN  
355 RDN  
356 OUTXB  
357 RDN  
358 OUTXB  
359 XEQ "WAIT"  
360 ADRON  
361 RTN  
362\*LBL "ERROR" - DISPLAY ERROR #  
363 CP 10  
364 "ERROR: "  
365 ARCL X  
366 AVIEW  
367 STOP  
368\*LBL "DONE"  
369 CF 10  
370 END - EXIT

# Using the 9114B with the IBM PC (PC-XT)

## Introduction

This section shows you the following two procedures:

- Step 1 – How to install the HP-IL routines on the IBM PC so you can use the 3 1/2-inch disc drive with your computer.
- Step 2 – How to use your 3 1/2-inch disc with your IBM PC.

Before going any further, be sure the HP 82973A HP-IL Interface Card is installed per the HP 82973A manual. The 5 1/4-inch disc that comes with the interface card will be used in the following procedure. This disc is called the HP 82973A HP-IL Interface Disc.

## Step 1 – Installing the HP-IL Driver on the IBM PC

This section shows you how to transfer two of the files from the HP 82973A HP-IL Interface Disc to your master DOS disc (the disc you use to boot your system). If you have an IBM PC, this master boot disc will be a 5 1/4-inch flexible disc. If you have the IBM PC-XT, this master boot disc would commonly be the Winchester disc at drive C.

First, for you IBM PC users, let's make a copy of your master boot disc. Begin at step 1 of this section. For you IBM PC-XT users, start with step 2 of this section.

1. Use the DISKCOPY command and make a copy of your DOS boot disc. First, boot up your system by placing the boot disc in drive A. Turn the system on and Enter the date and time. Type the next line.

**DISKCOPY A: B:**

Press Enter, and follow the diskcopy instructions.

Use the new copy of your master DOS disc to make all the following changes. This copy is now in drive B. Remove your master boot disc and put it away for now. Place the copy you have just made in drive A. Continue to step 2.

2. Check to see if you have a file called CONFIG.SYS on your DOS disc by typing the next line and pressing Enter.

## **DIR CONFIG.SYS**

If the file is found, the next two lines will appear on your display.

**Config Sys**

**1 File(s)**

If CONFIG.SYS is on your DOS disc, perform only **Procedure A** below.

If CONFIG.SYS is NOT on your DOS disc, perform only **Procedure B** below.

### **PROCEDURE A:**

Type in the next line and press Enter.

**TYPE CONFIG.SYS**

The contents of the CONFIG.SYS file is now displayed. You probably should write these files down as you will have to retype them.

Type the next two lines and add the files you just wrote down beginning at the place indicated. When all the files are added, the Z character is added by holding down the **Ctrl** key as you press the **Z** key.

**COPY CON CONFIG.SYS**

**DEVICE = HPIL.SYS**

Add the files you wrote down above

**Z (Ctrl Z)**

Now press the **Enter** key to store the file to your DOS disc.

### **PROCEDURE B:**

Type the next two lines. The **Z** character is added by holding down the **Ctrl** key as you press the **Z** key.

**COPY CON CONFIG.SYS**

**DEVICE = HPIL.SYS**

**Z (Ctrl Z)**

---

#### **NOTE**

If you set the address on the interface card to an address other than 1700 when you installed the HP-IL interface, you must specify your address when you type **DEVICE = HPIL.SYS**. For example, if you set the address of the interface card to 2200, enter the following line in CONFIG.SYS:

---

**DEVICE = HPIL.SYS /A 2200**

---

3. Copy the files **HPIL.SYS** and **HPILFOR.COM** from the HP 82973A HPIL Interface software disc to the DOS disc.

**EXAMPLE:** With the DOS disc in drive A (IBM PC), insert the HP-IL interface disc into drive B and type the next commands. If you have the IBM PC-XT insert the HP 82973A disc into the flexible disc drive and type the next two commands. This drive (IBM PC-XT) responds to both A: and B: identifiers.

After typing each line, press Enter and wait for the file to copy.

**COPY B:HPIL.SYS**  
**COPY B:HPILFOR.COM**

4. At this time, connect the HP 9114B to the HP-IL card and turn the disc drive on. Also remove the HP 82973A HPIL Interface disc. This should be done before you reset the computer.

With the DOS disc in drive A, reset the IBM PC so that the operating system is re-booted. Reset the IBM PC-XT so its operating system re-boots from the Winchester. Reset on both computers is done by pressing the Alt, Ctrl, and Del keys at the same time.

HPIL.SYS is now installed if the display screen shows HP-IL being present.

---

#### **NOTE**

If you want to run HPLINK, you need to first remove HPIL.SYS from the system. This allows the IBM PC to reside on the HP-IL without being the system controller.

The easiest way to do this on the IBM PC is to boot your computer with the old DOS disc that does not contain the files CONFIG.SYS, HPIL.SYS, or HPILFOR.COM.

On the PC-XT, remove the following line

**DEVICE = HPIL.SYS**

from the file CONFIG.SYS and reboot the computer.

---

## **Step 2 – Using Your 3 1/2-inch Disc Drive with your IBM PC**

The first step in using the 3 1/2-inch disc drive is to format the 3 1/2-inch discs. Formatting 3 1/2-inch discs must always be done using the HPILFOR routine that we installed on the operating system. The commands DISKCOPY and DISKCOMP will not work with the HP 9114B.

Data storage devices on the loop are assigned disc drive identifiers in a sequence following those already assigned on the IBM. For example, if you have disc drives A:, B:, and C: assigned to the IBM PC-XT and you have two HP-IL data storage units connected, the HP-IL units will be assigned the identifiers D: and E:. You can then use them as you would any of the disc drives on your IBM PC-XT.

The command to format a disc in the HP 9114B is shown next.

### **HPILFOR m:**

The m: is the disc drive identifier of the disc you want to format.

For example, to format a disc using drive D:, type:

### **HPILFOR D:**

Before the computer formats the specified disc drive, it prompts you to press a key to start formatting. This ensures that you do not accidentally format a disc that you do not want erased. (Remember that formatting a disc erases all information on that disc.) After pressing the key to confirm that you want a disc formatted, the computer begins the formatting operation.

Once the disc is formatted, you can write data on it. The Copy command is shown next. When using the Copy command, don't forget the space between the filename and the destination address (filename A: and filename C:); this also applies to the space between the \* and destination address (\* C: and \* A:) when copying the entire disc.

### **COPY C:filename A:**

and pressing Enter – copies the file specified from disc C to disc A.

**COPY A:filename C:**

and pressing Enter – copies the file specified from disc A to disc C..

**COPY A:/\* C:**

and pressing Enter – copies the entire disc in drive A to the disc in drive C.

**COPY C:/\* A:**

and pressing Enter – copies the entire disc in drive C to the disc in drive A.

---

**NOTE**

To initialize an HP-IL disc in single-sided format on the IBM PC, use the /w parameter as shown next.

**HPILFOR m:/w**

Remember that the m parameter is the identifier of the disc drive containing the disc you want to format.

When using a HP Portable (or HP Portable Plus) on the loop when the IBM PC is a controller, the HP Portable must be running a program that enables it to be a device on the loop. Otherwise the IBM PC and the HP Portable will both attempt to be the loop controller. The result is that the loop will not operate until either the IBM PC or the HP Portable is disconnected from the loop.

---

## Moving Data

You can use any formatting commands to move data between the HP Portable, the HP Portable Plus, the HP 150 Series, the HP Vectra PC, and the IBM PC.

There are two exceptions:

- To move data to one of the HP 150 Series, the disc must be formatted in the single-sided format if you are using an HP D/S or an HP 9133A/B/V/XV.
- Use discs formatted with the /Z option with the HP Portable or HP Portable Plus.